The claims

1. A method for restoring rice fertility comprising introducing a nucleic acid into rice, wherein the nucleic acid encodes the amino acid sequence of SEQ ID NO.75, or an amino acid sequence which is identical to at least 70% of the amino acid sequence of SEQ ID NO.75, and which functions to restore fertility.

2. The method of Claim 1, comprising introducing a nucleic acid into rice, wherein the nucleic acid encodes the amino acid sequence of SEQ ID NO.75.

3. The method of Claim 1 or 2, wherein the nucleic acid encoding the amino acid sequence of SEQ ID NO.75, or an amino acid sequence which is identical to at least 70% of the amino acid sequence of SEQ ID NO.75 is selected from nucleic acids of the following a) - p):

a) a nucleic acid comprising the bases 215-2587 of SEQ ID NO:69;

b) a nucleic acid comprising the bases 213-2585 of SEQ ID NO:70;

c) a nucleic acid comprising the bases 218-2590 of SEQ ID NO:71;

d) a nucleic acid comprising the bases 208-2580 of SEQ ID NO:72;

e) a nucleic acid comprising the bases 149-2521 of SEQ ID NO:73;

f) a nucleic acid comprising the bases 225-2597 of SEQ ID NO:74;

g) a nucleic acid comprising the bases 43907-46279 of SEQ ID NO:27;

h) a nucleic acid comprising the bases 229-2601 of SEQ ID NO:80;

i) a nucleic acid comprising the bases 175-2547 of SEQ ID NO:81;

j) a nucleic acid comprising the bases 227-2599 of SEQ ID NO:82;

k) a nucleic acid comprising the bases 220-2592 of SEQ ID NO:83;

l) a nucleic acid comprising the bases 174-2546 of SEQ ID NO:84;

m) a nucleic acid comprising the bases 90-2462 of SEQ ID NO:85;

n) a nucleic acid which is identical to at least 70% of the nucleic acid of any of a) - m), and which functions to restore fertility;

o) a nucleic acid which hybridizes to the nucleic acid of any of a) - m) under a moderate or high stringent condition, and which functions to restore fertility; and

p) a nucleic acid wherein one or a plurality of base(s) is deleted from, added to or substituted from the nucleic acid of any of a) - m), and which functions to restore fertility.

4. The method of Claim 3, wherein the nucleic acid

encoding the amino acid sequence of SEQ ID NO.75, or an amino acid sequence which is identical to at least 70% of the amino acid sequence of SEQ ID NO.75, and which functions to restore fertility, meets at least one of the following requirements 1) - 12):

1) a base corresponding to the base 1769 of SEQ ID NO.69 is A;

2) a base corresponding to the base 1767 of SEQ ID NO.70 is A;

3) a base corresponding to the base 1772 of SEQ ID NO.71 is A;

4) a base corresponding to the base 1762 of SEQ ID NO.72 is A;

5) a base corresponding to the base 1703 of SEQ ID NO.73 is A;

6) a base corresponding to the base 1779 of SEQ ID NO.74 is A;

7) a base corresponding to the base 1783 of SEQ ID NO.80 is A;

8) a base corresponding to the base 1729 of SEQ ID NO.81 is A;

9) a base corresponding to the base 1781 of SEQ ID NO.82 is A;

10) a base corresponding to the base 1774 of SEQ ID NO.83 is A;

11) a base corresponding to the base 1728 of SEQ ID NO.84 is A; or

12) a base corresponding to the base 1644 of SEQ ID

NO.85 is A.

5. A method for discerning whether a subject rice individual or a seed thereof has the rice restorer gene (the Rf-1 gene) or not, utilizing a nucleic acid encoding the amino acid sequence of SEQ ID NO.75, or an amino acid sequence which is identical to at least 70% of the amino acid sequence of SEQ ID NO.75, and which functions to restore fertility.

6. The method of Claim 5, utilizing a nucleic acid of any of the following a) - p):

a) a nucleic acid comprising the bases 215-2587 of SEQ ID NO:69;

b) a nucleic acid comprising the bases 213-2585 of SEQ ID NO:70;

c) a nucleic acid comprising the bases 218-2590 of SEQ ID NO:71;

d) a nucleic acid comprising the bases 208-2580 of SEQ ID NO:72;

e) a nucleic acid comprising the bases 149-2521 of SEQ ID NO:73;

f) a nucleic acid comprising the bases 225-2597 of SEQ ID NO:74;

g) a nucleic acid comprising the bases 43907-46279 of SEQ ID NO:27;

h) a nucleic acid comprising the bases 229-2601 of SEQ ID NO:80;

i) a nucleic acid comprising the bases 175-2547 of SEQ ID NO:81;

j) a nucleic acid comprising the bases 227-2599 of SEQ ID NO:82;

k) a nucleic acid comprising the bases 220-2592 of SEQ ID NO:83;

l) a nucleic acid comprising the bases 174-2546 of SEQ ID NO:84;

m) a nucleic acid comprising the bases 90-2462 of SEQ ID NO:85;

n) a nucleic acid which is identical to at least 70% of the nucleic acid of any of a) - m), and which functions to restore fertility;

o) a nucleic acid which hybridizes to the nucleic acid of any of a) - m) under a moderate or high stringent condition, and which functions to restore fertility; and

p) a nucleic acid wherein one or a plurality of base(s) is deleted from, added to or substituted from the nucleic acid of any of a) - m), and which functions to restore fertility.

7. The method of Claim 5 or 6, wherein the subject rice individual or the seed thereof is determined to have the Rf-1 gene, in the case that the nucleic acid encoding the amino acid sequence of SEQ ID NO.75, or an amino acid sequence which is identical to at least 70% of the amino acid sequence of SEQ ID NO.75, and which functions to restore fertility, meets at least one of the following

requirements 1) - 12):

1) a base corresponding to the base 1769 of SEQ ID NO.69 is A;

2) a base corresponding to the base 1767 of SEQ ID NO.70 is A;

3) a base corresponding to the base 1772 of SEQ ID NO.71 is A;

4) a base corresponding to the base 1762 of SEQ ID NO.72 is A;

5) a base corresponding to the base 1703 of SEQ ID NO.73 is A;

6) a base corresponding to the base 1779 of SEQ ID NO.74 is A;

7) a base corresponding to the base 1783 of SEQ ID NO.80 is A;

8) a base corresponding to the base 1729 of SEQ ID NO.81 is A;

9) a base corresponding to the base 1781 of SEQ ID NO.82 is A;

10) a base corresponding to the base 1774 of SEQ ID NO.83 is A;

11) a base corresponding to the base 1728 of SEQ ID NO.84 is A; or

12) a base corresponding to the base 1644 of SEQ ID NO.85 is A.

8. The method of Claim 6 or 7, wherein the method comprises:

i) preparing a pair of primers based on a base sequence of an adjacent region including any one of the following bases;

1) a base corresponding to the base 1769 of SEQ ID NO.69;

2) a base corresponding to the base 1767 of SEQ ID NO.70;

3) a base corresponding to the base 1772 of SEQ ID NO.71;

4) a base corresponding to the base 1762 of SEQ ID NO.72;

5) a base corresponding to the base 1703 of SEQ ID NO.73;

6) a base corresponding to the base 1779 of SEQ ID NO.74;

7) a base corresponding to the base 1783 of SEQ ID NO.80;

8) a base corresponding to the base 1729 of SEQ ID NO.81;

9) a base corresponding to the base 1781 of SEQ ID NO.82;

10) a base corresponding to the base 1774 of SEQ ID NO.83;

11) a base corresponding to the base 1728 of SEQ ID NO.84; and

12) a base corresponding to the base 1644 of SEQ ID NO.85

to amplify both the base of the above and the adjacent

region thereof;

ii) performing nucleic acid amplification reaction(s) using genome DNA of the subject rice individual or the seed thereof; and

iii) discerning the presence of the Rf-1 in the subject rice individual or the seed thereof based on polymorphism found in said nucleic acid amplification product.

9. The method of Claim 8 wherein the subject rice individual or the seed thereof is determined to have the Rf-1 gene, in the case that step iii) meets at least one of the following requirements 1) - 12):

1) a region including a base corresponding to the base 1769 of SEQ ID NO.69 does not have the TaqI recognition sequence;

2) a region including a base corresponding to the base 1767 of SEQ ID NO.70 does not have the TaqI recognition sequence;

3) a region including a base corresponding to the base 1772 of SEQ ID NO.71 does not have the TaqI recognition sequence;

4) a region including a base corresponding to the base 1762 of SEQ ID NO.72 does not have the TaqI recognition sequence;

5) a region including a base corresponding to the base 1703 of SEQ ID NO.73 does not have the TaqI recognition sequence;

6) a region including a base corresponding to the base 1779 of SEQ ID NO.74 does not have the TaqI recognition sequence;

7) a region including a base corresponding to the base 1783 of SEQ ID NO.80 does not have the TaqI recognition sequence;

8) a region including a base corresponding to the base 1729 of SEQ ID NO.81 does not have the TaqI recognition sequence;

9) a region including a base corresponding to the base 1781 of SEQ ID NO.82 does not have the TaqI recognition sequence;

10) a region including a base corresponding to the base 1774 of SEQ ID NO.83 does not have the TaqI recognition sequence;

11) a region including a base corresponding to the base 1728 of SEQ ID NO.84 does not have the TaqI recognition sequence; or

12) a region including a base corresponding to the base 1664 of SEQ ID NO.85 does not have the TaqI recognition sequence.

10. A method for inhibiting the function of the Rf-1 gene to restore fertility by introducing an antisense having at least 100 bases in length, and being selected from base sequences complementary to a nucleic acid encoding the amino acid sequence of SEQ ID NO.75, or an amino acid sequence which is identical to at least 70% of

the amino acid sequence of SEQ ID NO.75, and which functions to restore fertility.

11. The method of Claim 10, wherein the nucleic acid encoding the amino acid sequence of SEQ ID NO.75, or an amino acid sequence which is identical to at least 70% of the amino acid sequence of SEQ ID NO.75 is selected from nucleic acids of the following a) - p):

a) a nucleic acid comprising the bases 215-2587 of SEQ ID NO:69;

b) a nucleic acid comprising the bases 213-2585 of SEQ ID NO:70;

c) a nucleic acid comprising the bases 218-2590 of SEQ ID NO:71;

d) a nucleic acid comprising the bases 208-2580 of SEQ ID NO:72;

e) a nucleic acid comprising the bases 149-2521 of SEQ ID NO:73;

f) a nucleic acid comprising the bases 225-2597 of SEQ ID NO:74;

g) a nucleic acid comprising the bases 43907-46279 of SEQ ID NO:27;

h) a nucleic acid comprising the bases 229-2601 of SEQ ID NO:80;

i) a nucleic acid comprising the bases 175-2547 of SEQ ID NO:81;

j) a nucleic acid comprising the bases 227-2599 of SEQ ID NO:82;

k) a nucleic acid comprising the bases 220-2592 of SEQ ID NO:83;

l) a nucleic acid comprising the bases 174-2546 of SEQ ID NO:84;

m) a nucleic acid comprising the bases 90-2462 of SEQ ID NO:85;

n) a nucleic acid which is identical to at least 70% of the nucleic acid of any of a) - m), and which functions to restore fertility;

o) a nucleic acid which hybridizes to the nucleic acid of any of a) - m) under a moderate or high stringent condition, and which functions to restore fertility; and

p) a nucleic acid wherein one or a plurality of base(s) is deleted from, added to or substituted from the nucleic acid of any of a) - m), and which functions to restore fertility.

12. A nucleic acid encoding the amino acid sequence of SEQ ID NO.75, or an amino acid sequence which is identical to at least 70% of the amino acid sequence of SEQ ID NO.75, and which functions to restore fertility.

13. The nucleic acid of Claim 11 which is selected from nucleic acids of the following a) - p):

a) a nucleic acid comprising the bases 215-2587 of SEQ ID NO:69;

b) a nucleic acid comprising the bases 213-2585 of SEQ ID NO:70;

c) a nucleic acid comprising the bases 218-2590 of SEQ ID NO:71;

d) a nucleic acid comprising the bases 208-2580 of SEQ ID NO:72;

e) a nucleic acid comprising the bases 149-2521 of SEQ ID NO:73;

f) a nucleic acid comprising the bases 225-2597 of SEQ ID NO:74;

g) a nucleic acid comprising the bases 43907-46279 of SEQ ID NO:27;

h) a nucleic acid comprising the bases 229-2601 of SEQ ID NO:80;

i) a nucleic acid comprising the bases 175-2547 of SEQ ID NO:81;

j) a nucleic acid comprising the bases 227-2599 of SEQ ID NO:82;

k) a nucleic acid comprising the bases 220-2592 of SEQ ID NO:83;

l) a nucleic acid comprising the bases 174-2546 of SEQ ID NO:84;

m) a nucleic acid comprising the bases 90-2462 of SEQ ID NO:85;

n) a nucleic acid which is identical to at least 70% of the nucleic acid of any of a) - m), and which functions to restore fertility;

o) a nucleic acid which hybridizes to the nucleic acid of any of a) - m) under a moderate or high stringent condition, and which functions to restore fertility; and

p) a nucleic acid wherein one or a plurality of base(s) is deleted from, added to or substituted from the nucleic acid of any of a) - m), and which functions to restore fertility.